(54) Title: METHOD FOR USING NATIVE CHARACTERS IN DOMAIN NAMES
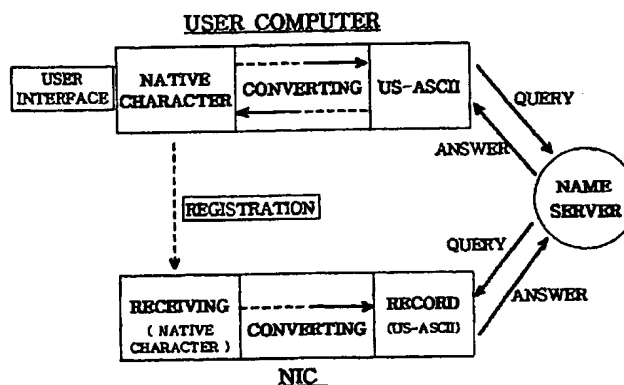
(57) Abstract: Under the current DNS no character other than English (US-ASCII) may be used in the domain names. This method, without any change of the current DNS, only by upgrading the computer of user provides a way to use the native characters in domain names. 1) If the registrant wishes to register in his/her native language, all the characters should be encoded according to the prescribed code, and then the converted name is registered with "multilingual code" and "language recognition code". 2) If the Internet user inputs the address that includes a native top-level domain in order to connect to a "native-name", the conversion program installed in user computer will convert it in the same way as shown in article 1) and queries the converted-name to the name server. 3) On the contrary, when displaying the converted domain name (which includes the multilingual code and the language recognition code) on the monitor, conversion will take place in reverse.

DESCRIPTION

Method for Using Native Characters
in Domain Names

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A. Technological Areas

This method is concerned with the domain naming system on the Internet, suggesting a way to use native language characters under the current system
10 where US-ASCII characters are used exclusively.

B. Background of the Invention

15 There has been a very rapid expansion of the Internet and under the current situation people with plenty of information grow richer while those lacking in information, grow poorer. It is quite fortunate that the emergence of Windows and native language word-processors helped us control the use of computers without learning English. And for homepages on the internet, the native
20 language can be used along with English, which helps people easily connect to the internet and get the information they need.

However, the use of domain names is still limited (RFC1035) to the use of the alphabet "a" to "z" case-insensitively and digits from 0 to 9, plus the
25 "-"(hyphen).

Consequently, it is a common situation that all institutions and organizations as

well as companies in countries whose native language is not English have to transform their names into English sounds and use domain names like secret codes. Because of this, ordinary users must memorize the English sound like strange codes to them or refer to their memos whenever they connect to the

5   relevant site.

This method provides an environment that can help register friendlier domain names in native languages and utilizes all Internet services in the native language.

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C. Description of the Invention

1) First, when a user registers the domain name in his/her native language characters under this method, in order to fit the current domain name system

15   (RFC1035), each character is converted into US-ASCII characters according to the codes that are set in this method and then the result is registered.

2) When an Internet user inputs a domain name in his/her native language to connect into the relevant domain, each character is converted into US-ASCII characters according to the codes that are set in this method, and the site of

20   the converted domain name is connected.

3) When the "registered domain name" that was converted from **"native language characters domain name"**(native-name, in short) appears on the user's monitor, in order to display it in the original language through a reverse-conversion, we need to distinguish between the domain name converted

25   from a native-name and the traditional US-ASCII domain name. For such distinction, "Multilingual code", that is recognition code for the registered name converted from the native-name, is included when the native-name is converted into US-ASCII name.

4) It is necessary to install the conversion program for the native-name in the

30   user's computer (or in the server computer), so that the user may register and use the domain name in his/her native language.

1. Multilingual code(The recognition code for the domain names converted from native-names)

We place the combination of some characters that can be used in domain names under the current domain name system(that will be US-ASCII character combination) at the specific location on the domain name as the "multilingual code". Then, let it be automatically included when a native-name is converted and registered. (Registration is not allowed for domain names as ordinary domain names that include the identical character combinations with the multilingual code at the same position.)

The locations of the multilingual code can be placed at each level of domain names as described in the followings, according to the necessity of us.

1-1. included in the user name level

When the multilingual code is included in the user name level, native-names are converted and registered with the multilingual code under an existing gLTD or 2LD such as "mld-----.com" "mld-----.net" "mld-----.co.kr.

Example)

native-name.COM ==conversion==> mld(+)converted-name.com

(The ".COM" represents "native top level domain")

1-2. Included in the second level domain (2LD) location

When it is included in the 2LD(2nd Level Domain), the 2LD are created such as ".ml.com," ".ml.net," and ".ml.org," and the 2LD (.ml) becomes the "multilingual code". And native-names are converted and registered at the sub-level of the 2LD.

Example)

multilingual-name.COM ==conversion==> converted-name.ml.com

1-3. Included in the top level domain

When it is included in the TLD (Top Level Domain), new gTLDs are created as ".mcom," ".mnet," ".morg," and those gTLDs become

"multilingual codes" or, a certain ccTLD (country code TLD) can be used as a gTLD for native-names to be converted and registered at the sub-level of them.

Example)

native-name.COM ==conversion==> converted-name.mcom

2. Language code(Language recognition code)

If we try to code every character of all languages in one set of codes, we need a large number of US-ASCII to express one native character.

So, each language is provided a unique "language code" in 2 US-ASCII characters and it is added to the converted domain. And characters of each language are coded respectively. (When converting/registering the native-names under the ccTLD such as "mld-----.kr," "mld-----.jp," or "mld-----cn," the language code is possible to be omitted.)

2-1. When the "multilingual code" is included in the user's name

.When the multilingual code is included in the user's name part as described above in "Article 1-1," the native-name is converted and registered under an existing gTLD or 2LD. Then, the multilinual code and a language code are added together for registration

e.g.) When the multilingual code is "mld"

and the language code for Korean is "kr",

then

Korean-name.COM ==conversion==> mld(+)kr(+)converted-name.com

and when the language code for Japanese is "jp",

then

Japanese-name.COM ==conversion==> mld(+)jp(+)converted-name.com

2-2. When the second level domain (2LD) is the "multilingual code"

When the 2LD is the multilingual code such as in the above "Article 1-2",

then create the 2LD for each language including a language code such as ".mldkr.com" for Korean and ".mldjp.com" for Japanese, under which native-names are converted and registered. But in this case, the "language code" can carry out the role of multilingual code simultaneously, so it is possible to leave out multilingual code such as ".kr.com" for Korean-name and ".jp.com" for Japanese-name.

　　　e.g.) When the language code for Korean is "kr", and the language code for Japanese is "jp",

　　　Korean-name.COM ==conversion==> converted-name.kr.com

　　　Japanese-name.COM ==conversion==> converted-name.jp.com

2-3. When Top Level Domain (TLD) is the "multilingual code"

When the TLD is the "multilingual code" as in the above "Article 1-3," then create the 2LD for each language, such as ".kr.mcom" for Korean-name and ".jp.mcom" for Japanese-name, and under which native-names are converted and registered.

　　　e.g.) When the language code for Korean is "kr", and the language code for Japanese is "jp",

　　　Korean-name.COM ==conversion==> converted-name.kr.mcom

　　　Japanese-name.COM ==conversion==> converted-name.jp.mcom

3. Character Code

All characters for each language (all characters = English characters + digits + native characters) are coded with "36 character arrangements", from a to z and from 0 to 9 (or 37 characters, including the hyphen).

　　　For example, the character codes for Korean can be organized in the following order:

　　　　digit code >

　　　　0=00, 1=01, 2=02, 3=03, 4=04, 5=05, 6=06, 7=07, 8=08, and 9=09

　　　　alphabet code >

　　　　a=0a, b=0b, c=0c, d=0d ....x=0x, y=0y, z=0z

Korean character code >

3-digit arrangements such as "000", "123", "abc", :zzz" are made with 36 US-ASCII characters(0-9 and a-z), and 11,172 Korean characters are arranged from "100" in order, and the relevant arrangement values are set as the "character code" of the character. (As alphabets and numbers are arranged in 2-digit arrangements such as "00-0z", characters from "000" to "099" whose first letter is "0" are excluded from the Korean character code.)

, The "-"(hyphen) is used identically.

Also, as another example, the character codes for German can be organized in the following order:

digit >

0=00, 1=1, 2=2, 3=3, 4=4, 5=5, 6=6, 7=7, 8=8, and 9=9

alphabets >

a=a, b=b, c=c, d=d ....x=x, y=y, z=z영문자

characters distinguished from the English Alphabet:

There are four characters in German, which is distinguished from the English alphabet. Therefore, only four letters are considered as native language characters.

ä = 0a, ö = 0o, ü = 0u, and ß = 0b US-ASCII와 구별되는 문자

4. **TLD Code**(Top Level Domain Code)

The top level domains in native-names are coded in lump sums regardless of the character codes of "Article 3."

For example, the Korean top-level domain for companies is coded as follows:

4-1. Above Article 2-1   ".회사" = ".com"
4-2. Above Article 2-2   ".회사" = ".kr.com" (또는 ".mlkr.com)
4-3. Above Article 2-3   ".회사" = ".kr.mcom"

5. Conversion of native-names

Under the system of this method, the native-name will be converted as follows:.

5-1. When the TLD code is the same as the case which is previously mentioned in article 4-1 (".회사"=".com"):

1) The "multilingual code" will be located in its designated place.

2) Then place "language code."

3) The native-name (or mixed name in English and native language) is placed after being converted according to the character code of article 3.

4) Convert the top-level domain according to the TLD code.

The results are as follows:

The registered domain name: mld(+)kr(+)converted-name.com

         "mld": Multilingual code

         "kr": language code (e.g.; kr: Korea, jp: Japan, cn: China)

         "converted-name": character codes

         ".com": the TLD code

5-2. When the TLD code is the same as the case that was previously mentioned in article 4-2, and 4-3.

1) The native-name (or mixed name in English and native language) is placed after being converted according to the character code of article 3.

2) Convert the top-level domain according to the TLD code.

The results are   "converted-name.kr.com" (example of article 4-2)

                    "converted-name.kr.mcom" (example of article 4-3)

5-3. In the case of a Korean name for example

When the "multilingual code" is "mld",

the "language code" for Korean is "kr",

the TLD code of ".회사"(a top level domain for Korean) is ".com",

and the Korean-name to be registered is "대한민국ks203.회사",

the registered domain name will be as follows:

Korean-name (user interface): 대한민국ks203.회사

(Conversion)

   multilingual code: mld

   Language : kr

character code:

Korean

     대 (1793rd from "가") : 2ds (1793rd from '100')

     한 (10589th from '가') : 964 (10589th from '100')

     민 (4093rd from '가') : 45y (4093초 from '100')

     국 (366th from '가')   : 1a5 (366th from '100')

Alphabet

     ks: 0k0s (k: 0k, s: 0s)

Numeric

     203: 020003 (2: 02, 0: 00, 3: 03)

TLD

     .회사 : .com

(Results)

   The registered domain name: mldkr2ds96445y1a50k0s020003.com

<When the TLD code is the same as the examples from
articles 4-2 and 4-3>

   (Results)

   2ds96445y1a50k0s020003.mlkr.com (in the case of article 4-2)

   2ds96445y1a50k0s020003.kr.mcom (in the case of article 4-3)

6. The user interface

When the user inputs the address that includes the native TLD to log-on to the web site with the native-name by using the Internet log-on program , the translation program installed in the user computer will operate and will convert the name to US-ASCII name, and then will send the converted-name to the

5   log-on program.

When the registered domain name(the converted-name) is displayed on the monitor, the domain name will be displayed after conversion only when the language code is the same as the language of user's computer.

But if it is different from the language of the user or it is a traditional

10   domain, it will be displayed in US-ASCII without any conversion.

7. Registration

15   When the user wishes to register the domain name in a native language, the domain name will be converted and registered at the relevant registration office.

20   8. Logging-on to the foreign language domain

When the domain to which the user wishes to log-on to is a different language domain from the language of the user (e.g., when the Japanese user wishes to log-on to a Korean domain name), the user should input the

25   registered domain name which is converted.

(e.g. instead of putting in "대한민국s203.회사", the user should input "mldkr2ds96445y1a50k0s020003.com")

30   9. Effects

The native-names may be registered and used under the current domain name

system if we use this method. The 3rd and 4th level domain as well as the 1st and 2nd level domain can fully utilize the native language and the user can log-on to the web site using the native language only. Therefore, people who don't know English at all and the children who never had the chance to learn
5   English could easily use the Internet. Also, various domain names may be possible because it is possible to use the native language and English together as well as numbers. Especially, since under the system of this method domain names are classified according to languages, when it is different from the language of the user, it will be displayed on the monitor without conversion.
10   Therefore, the domain name in different languages could be read and written by using an alphabet, which enables the international use of the native-names. Also, it could be applied to the e-mail address and could create an environment for the complete use of a native language.

(e.g.: "대한@대한민국ks203.회사"==>"2ds964@mldkr2ds96445y1a50k0s020003.com"
15

D. Brief explanation of the drawings

Fig. 1 >
20   Diagram of the registration, the conversion of characters, and the Query & Answer under the system of this method. The conversion will be done at the place of registration at the time of registration and in the computer of the user at the time of connection. (The conversion could be done in the server if the conversion program is installed on the server; however, it will
25   be done in the computer of the user for convenience.)
     The questions and answers will always be done with the registered domain name, that is the domain name converted into US-ASCII from native-name.

Fig. 2 >
30   Explanation of the process of the conversion by the conversion program when the user inputs the native-name.

Fig. 3 >

Explanation of the process of conversion of the received domain name and displaying it on the monitor.

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CLAIMS

5   1. Method for using native language characters in domain names.

the method comprises:

1) Placing the "combination of some characters" that can be used under current DNS at specific location of the domain name and use them as the "multilingual code".(multilingual code means the recognition code for the

10   converted domain names from native-names).

2) Differentiating every name which is registered after being converted from "native-names" from the traditional domain names by automatically including the "multilingual code".

3) Coding all the characters(the native language + digits + alphabet) to be

15   used in the native-name with the arrangement of 36 US-ASCII (a-z, 0-9) characters (or 37 characters including the hyphen), and using them as the "character code."

4) encoding the "native-names" according to the character code and registering the converted name.

20

2. Method that enables the use of native language in e-mail addresses by applying the method of article 1 above.

3. Method of classifying the converted domain name according to the language

25   which the name was converted from by allocating one or two US-ASCII characters to every language and using them "language recognition code". and placing that code in converted domain name.

4. Method of using top level domains(or 2nd level domains or 3rd level

30   domains) as the "multilingual code"(or multilingual code + language code) to distinguish the domain names converted from native-names from traditional domain names in "the method for using native language characters in domain .

names"

5. Method of encoding "native TLD(Top Level Domain)" into "US-ASCII TLD"(or TLD + 2LD) directly in "the method for using native language characters in domain names".

5   (e.g., encoding Korean TLD ".회사" into ".com" or ".co.kr", and ".한국" into ".kr")

6. Conversion program that converts the "native-name" into the "US-ASCII domain name" and that is operated by the input of the native TLD.

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7. Application program that converts the native characters into character codes and the character codes into the native characters as in articles 1 to 5.

8. Internet-related program that includes the translation functions of converting
15 the native characters into the character codes and the character codes into the native characters as in articles 6 and 7.

9. Recording media that is readable with computers and in that the programs which actualize the methods mentioned in articles 1 to 5 and the program
20 mentioned in article 6 is recorded .

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USER COMPUTER
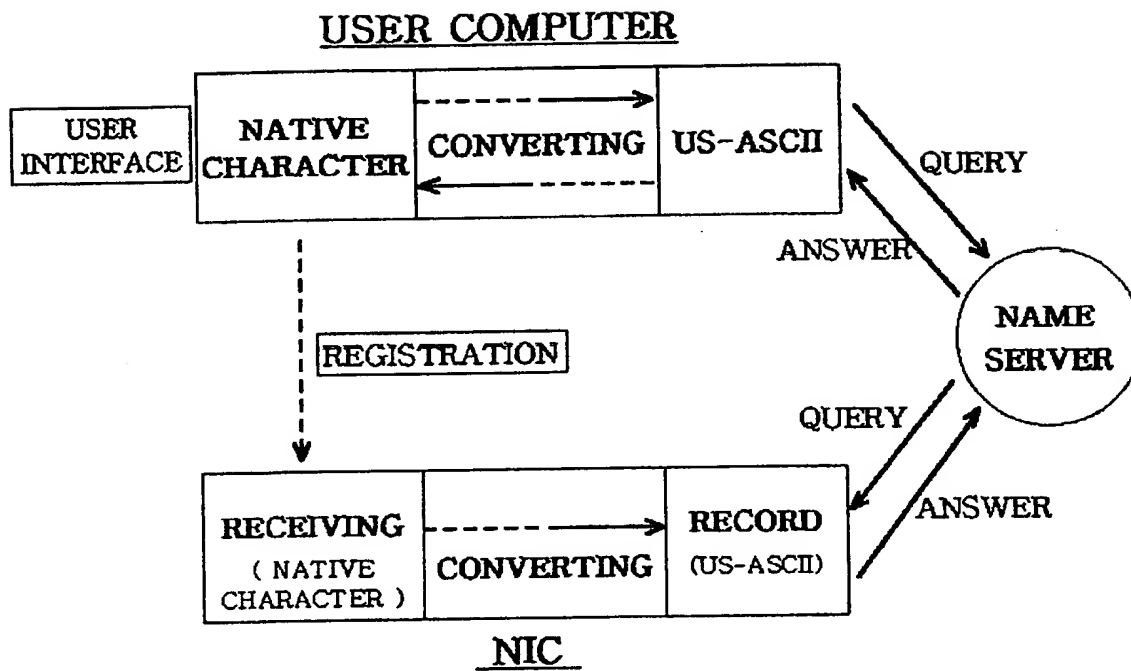
NOTE

------ : NATIVE CHARACTER

———— : US-ASCII CHARACTER

Fig. 1
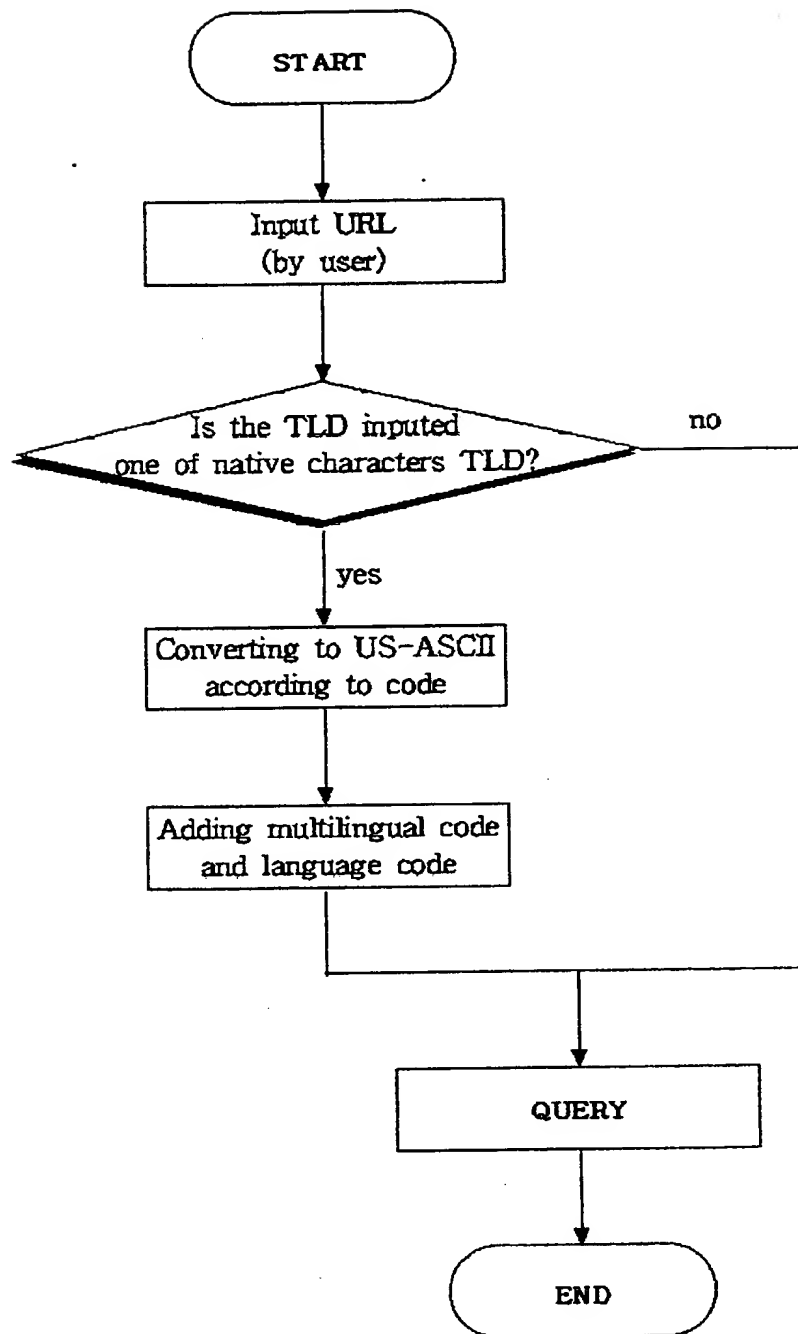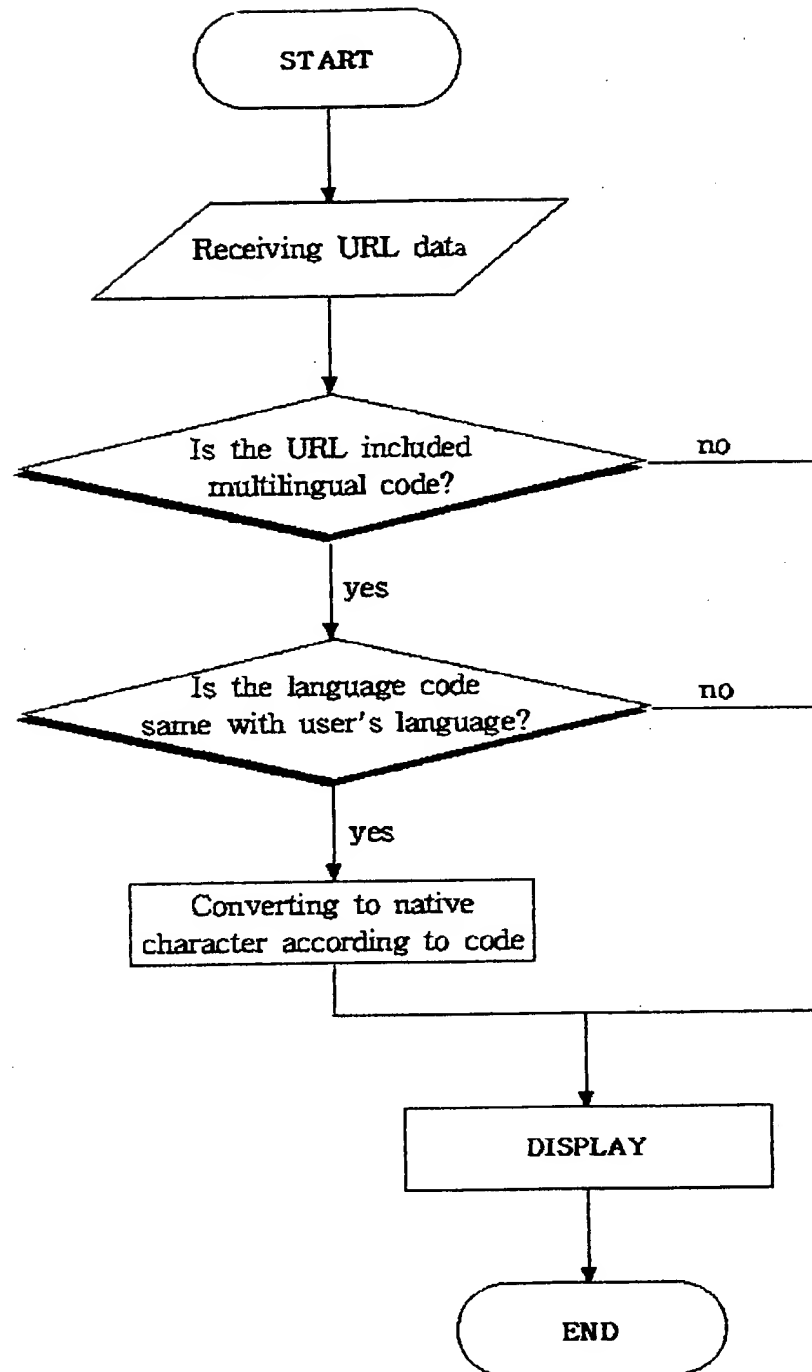
```
                    ┌─────────────┐
                    │    START    │
                    └─────────────┘
                           │
                           ▼
                  ┌──────────────────┐
                  │   Input URL      │
                  │   (by user)      │
                  └──────────────────┘
                           │
                           ▼
              ╱─────────────────────────────╲
             ╱  Is the TLD inputed           ╲        no
             ╲  one of native characters TLD?╱────────────┐
              ╲─────────────────────────────╱             │
                           │                               │
                          yes                              │
                           ▼                               │
                  ┌──────────────────┐                     │
                  │ Converting to US-ASCII│                 │
                  │  according to code │                    │
                  └──────────────────┘                     │
                           │                               │
                           ▼                               │
                  ┌──────────────────┐                     │
                  │ Adding multilingual code│               │
                  │  and language code │                    │
                  └──────────────────┘                     │
                           │                               │
                           └───────────────┬───────────────┘
                                           │
                                           ▼
                              ┌──────────────────────┐
                              │        QUERY         │
                              └──────────────────────┘
                                           │
                                           ▼
                                  ┌─────────────┐
                                  │     END     │
                                  └─────────────┘
```

Fig. 2

```
                        ┌─────────────────┐
                        │      START       │
                        └─────────────────┘
                                 │
                                 ▼
                        ╱─────────────────╲
                       ╱  Receiving URL data ╲
                       ╲───────────────────╱
                                 │
                                 ▼
                    ◇─────────────────────◇
                   ╱   Is the URL included  ╲        no
                   ╲    multilingual code?  ╱─────────────┐
                    ◇─────────────────────◇              │
                                 │ yes                    │
                                 ▼                        │
                    ◇─────────────────────◇              │
                   ╱   Is the language code ╲      no     │
                   ╲ same with user's language?╱──────────┤
                    ◇─────────────────────◇              │
                                 │ yes                    │
                                 ▼                        │
                    ┌─────────────────────┐              │
                    │  Converting to native │              │
                    │ character according to code│          │
                    └─────────────────────┘              │
                                 │                        │
                                 └────────────┬───────────┘
                                              ▼
                                    ┌─────────────────┐
                                    │     DISPLAY      │
                                    └─────────────────┘
                                              │
                                              ▼
                                    ┌─────────────────┐
                                    │      END         │
                                    └─────────────────┘
```

Fig. 3

INTERNATIONAL SEARCH REPORT

A.	CLASSIFICATION OF SUBJECT MATTER

IPC7 G06F 17/22

According to International Patent Classification (IPC) or to both national classification and IPC

B.	FIELDS SEARCHED

Minimun documentation searched (classification system followed by classification symbols)

Documentation searched other than minimun documentation to the extent that such documents are included in the fileds searched

Electronic data base consulted during the intermational search (name of data base and, where practicable, search trerms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	KR 2000-2335 A (H. N. KIM) 5 SEPTEMBER 2000 (Family None) * whole documents	1-3
Y	WO 99/19814(POUFLIS JASON) 22 APRIL 1999 (Family None) * abstract & claims	1-3
Y	M. J. DUERST 'Internationalization of domain names' : Internet Draft, 1998, p. 1-15 (Family None) * abstract & claims	1-3
A, P	KR 2000-44709 A (H. N. KIM) 5 DECEMBER 2000 (Family None) * whole documents	1-3
A	JP 11-316720 A (NIPPON COMPUTER EIDIDDO DESIGN KK.) 16 NOVEMBER 1999 (Family None) * whole documents	1-3
A	US 4884217 A (DU PONT) 28 NOVEMBER 1989 * whole documents	1-3
A	EP 413132 A2 (IBM) 20 FEBRUARY 1991 * whole documents	1-3

☐ Further documents are listed in the continuation of Box C.   ☒ See patent family annex.

*	Special categories of cited documents:
"A"	document defining the general state of the art which is not considered to be of particular relevence
"E"	earlier application or patent but published on or after the intemational filing date
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
"O"	document referring to an oral disclosure, use, exhibition or other means
"P"	document published prior to the international filing date but later than the priority date claimed

"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X"	document of particular relevence; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y"	document of particular relevence; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 MAY 2001 (15.05.2001)	16 MAY 2001 (16.05.2001)

Name and mailing address of the ISA/KR	Authorized officer
Korean Intellectual Property Office Government Complex-Daejeon, Dunsan-dong, Seo-gu, Daejeon Metropolitan City 302-701, Republic of Korea Facsimile No. 82-42-472-7140	KIM, Jae Wook Telephone No. 82-42-481-5962

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR01/00124

Box I   Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 6, 7, 8, 9
because they relate to subject matter not required to be searched by this Authority, namely:

    Claims 6, 7, 8 and 9 are considered to be a computer converting programs and are subject matter which the International Searching Authority is not required to search under Article 17(2)(a)(i) and Rule(VI)PCT.

2. ☒ Claims Nos.: 4, 5
because they relate to part of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

    The claims are not provided with technical features and not extremely clear.

3. ☒ Claims Nos.: 7, 8, 9
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II   Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Search Authority found multiple inventions in this international application, as follows:

1. ☐ As all required addtional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be established without effort justifying an additional fee, this Authority did not invite payment of any addition fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest   ☐ The additional search fees were accompanied by the applicant's protest.

                                                 ☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (1)) (July 1998)

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4884217 A	28. 11. 1989	CA 1310424 A1	17. 11. 1992
EP 413132 A2	20. 02. 1991	JP 3-83167 A	09. 04. 1991
		US 5146406 A	08. 09. 1992